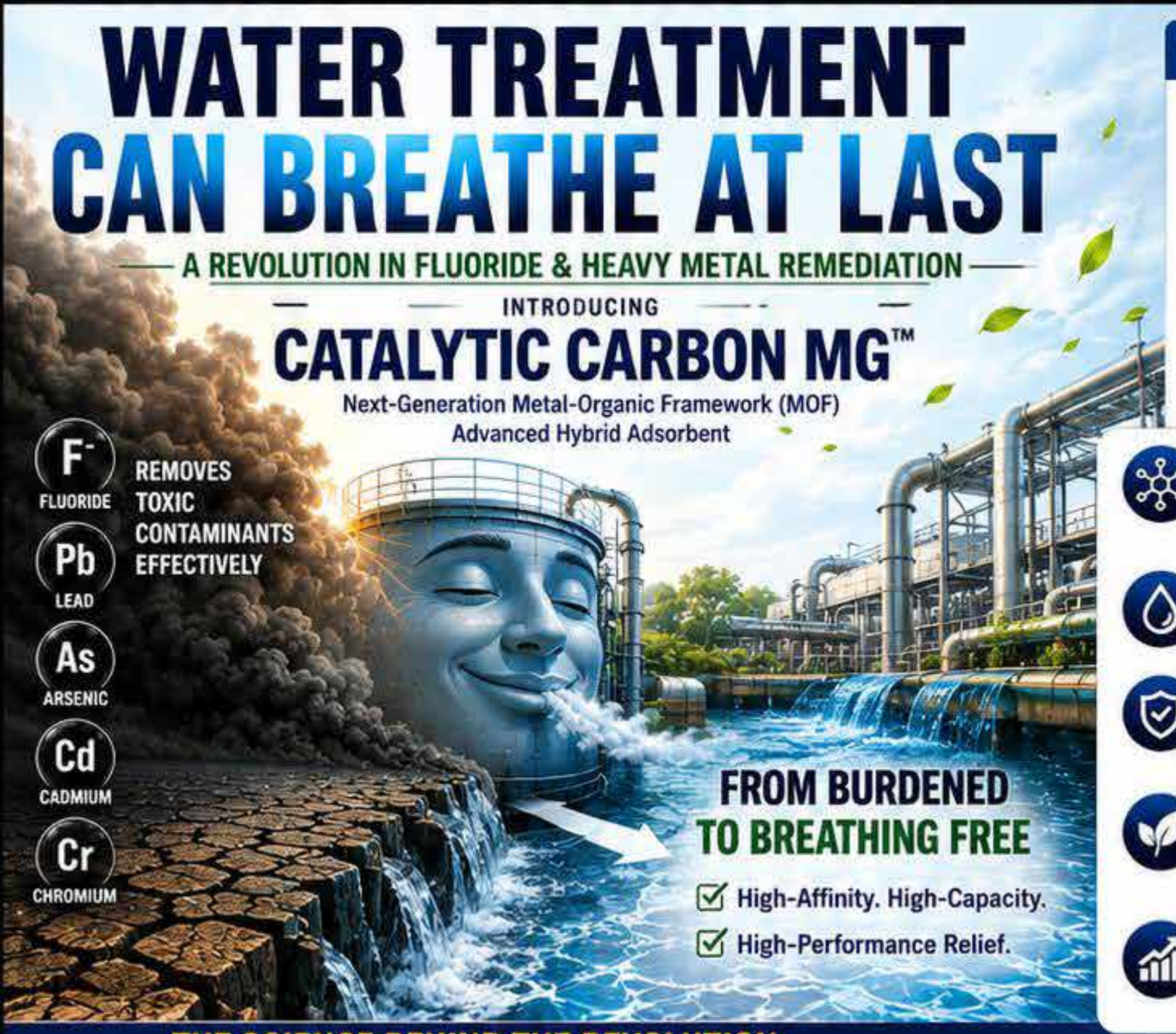
WATER TREATMENT CAN BREATHE AT LAST

A REVOLUTION IN FLUORIDE & HEAVY METAL REMEDIATION

INTRODUCING

CATALYTIC CARBON MG™

Next-Generation Metal-Organic Framework (MOF)
Advanced Hybrid Adsorbent



THE DREAM OF PURE WATER. NOW A REALITY.

Every drop matters. Every life matters. Excess fluoride and toxic heavy metals in water are silently damaging the health and future of millions. Catalytic Carbon MG™ is the breakthrough solution our world has been waiting for.

CLEANER WATER. HEALTHIER PEOPLE. STRONGER FUTURE.

REVOLUTIONARY Fe-Mg MOF TECHNOLOGY
Bimetallic iron-magnesium sites create ultra-strong affinity for fluoride and heavy metals through advanced surface coordination.

SUPERIOR PERFORMANCE
Up to 400% more capacity than traditional media with faster removal kinetics and longer service life.

WIDE pH TOLERANCE
Performs reliably in natural water pH 5.5 – 8.5 without extensive pre-treatment or chemical adjustments.

CLEAN & SAFE SOLUTION
No chemical sludge. No secondary pollution. Zero leaching of iron, magnesium or fluoride. Environmentally responsible.

LOWER COSTS. HIGHER VALUE.
Smaller footprint, reduced capital investment, lower operational costs and minimal maintenance.

THE SCIENCE BEHIND THE REVOLUTION

ADVANCED REMOVAL MECHANISM

Catalytic Carbon MG™ works through advanced surface coordination chemistry and electrostatic interaction. Iron (Fe^{3+}) and Magnesium (Mg^{2+}) centers in the MOF structure create a highly positive electrostatic field. Fluoride ions (F^-) enter the porous matrix and undergo rapid ligand exchange, forming exceptionally stable bonds.

$$\equiv Me{-}OH + F^- \rightarrow \equiv Me{-}F + OH^-$$

(Where ≡Me represents Fe–Mg MOF coordination sites)

The strong bond between fluoride and the Fe–Mg sites prevents desorption even under fluctuations in concentration, pressure, temperature or water hardness.

INTERFERENCE RESISTANCE

Ordinary adsorbents suffer from competitive adsorption from sulfates (SO_4^{2-}), chlorides (Cl^-), bicarbonates (HCO_3^-) and other co-existing ions. Catalytic Carbon MG™ has engineered pore size and MOF geometry that prioritizes the high charge density of fluoride, ensuring unmatched selective removal even in complex water matrices.

PROVEN SUPERIOR PERFORMANCE

Adsorption Capacity Comparison (Influent Fluoride: 5.0 mg/L, pH: 7.2, Temperature: 20°C)

ADSORBENT MEDIA BRAND / TYPE	FLUORIDE CAPACITY (mg/g)	RECOMMENDED OPERATING pH	ATTRITION RATE (%)
Catalytic Carbon MG™ (Watch Water)	**14.5 – 18.2**	**5.5 – 8.5**	**< 0.5%**
Standard Activated Alumina (AA)	2.1 – 4.5	5.5 – 6.5	> 3.0%
Standard Bone Char Media	1.5 – 3.0	6.5 – 7.0	> 5.0%
Generic Iron Oxide Adsorbents	4.0 – 6.2	6.0 – 7.5	> 2.0%

*Test Conditions: Influent Fluoride 5.0 mg/L | pH: 7.2 | Temperature: 20°C

Faster breakthrough curve = Smaller equipment footprint
Lower capital investment = Greater savings

PHYSICAL & CHEMICAL SPECIFICATIONS

Base Material Matrix	Premium Highly Activated Catalytic Carbon
Surface Modification Layer	Engineered Iron–Magnesium (Fe–Mg) MOF Coating
Total Specific Surface Area	> 1100 m^2 / gram
Bulk Density	510 – 540 kg/m^3
Particle Size Range	8 x 30 Mesh (Standard Municipal Grade)
Moisture Content (as packed)	< 4.5% by weight
Hardness / Abrasion Index	> 95% (Minimum attrition loss during backwash)

HYDRAULIC GUIDELINES & OPERATING PARAMETERS

- **Minimum Bed Depth:** 900 mm (35 inches) for standard column configurations.
- **Operating Flow Velocity:** 8 – 15 m/h (Continuous processing rate)
- **Backwash Expansion Rate:** 30% to 45% bed expansion to release trapped physical particulates.
- **Backwash Flow Rate:** 20 – 25 m/h depending on water temperature.
- **Freeboard Space Allowance:** Minimum 50% of the settled bed depth to prevent media migration.

PRE-TREATMENT RECOMMENDATIONS

While Catalytic Carbon MG™ is highly resilient, raw water with high turbidity (> 1 NTU) or elevated oil/grease content should pass through a standard multi-media sand filter or 5-micron mechanical sediment filter beforehand.

This prevents premature physical fouling of the high-surface-area MOF structures, ensuring full availability of the Fe–Mg active sites for fluoride capture.

• WHY CHOOSE CATALYTIC CARBON MG™?

STRONG & SELECTIVE FLUORIDE BINDING | DURABLE & LONG LASTING | FAST KINETICS LOWER EBCT | GREEN TECHNOLOGY ZERO SECONDARY POLLUTION | NO CHEMICAL SLUDGE ZERO LEACHING | LOWER OPEX HIGHER ROI

WIDE RANGE OF APPLICATIONS

Municipal Water Treatment Plants | Industrial Wastewater | Rural & Community Water Systems | Point-of-Use / Point-of-Entry

ONE SOLUTION. MANY APPLICATIONS. ENDLESS IMPACT.

Watch Water® GERMANY
Advanced Solutions. Purest Impact.
www.watchwater.de

SAFE WATER TODAY. HEALTHY GENERATIONS TOMORROW. LEY'S BUILD A FLUORIDE-FREE FUTURE TOGETHER.

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